

The following is a complete listing of all claims in the application, with an indication of the status of each:

**Listing of claims:**

- 1        1 (Currently amended). A computer-implemented auction method for holding an auction for a product comprising the steps of:
  - 3            receiving bids from at least one computer or from multiple computers within a network of computers, ~~for each product type of multiple product types in a transaction,~~ that include minimum desired volumes and maximum desired volumes and evaluation prices for said product ~~wherein said evaluation prices are represented as a non-linear function relative to the desired volume of said product in said transaction;~~
  - 9            generating, using computing resources, a finite set of bids that include as an element said bids that were received from said at least one computer or from multiple computers within said network of computers;
  - 12          employing dynamic programming using said computing resources to generate, using said bids that were received in said receiving bids step, a subset of bids wherein a maximum gain is obtained within a range represented by a count of said product available for sale; and
  - 16          identifying or accepting a bid from said subset of bids.
- 1        2. Canceled
- 1        3 (previously presented). The auction method according to claim 1, further comprising the steps of:
  - 3            allocating a two-dimensional array V to a memory area by using said dynamic programming using said computing resources;
  - 5            initializing said two-dimensional array V; and
  - 6            recursively solving the recursive equation for said two-dimensional array V,

7           wherein

8        $V(k, j) := \max \{V(k+1, j), V(k, j+1), \max_{l_k \leq n \leq h_k} \{V(k+1, j+x) + e_k(x)\}\}$

9       is used as the recursive equation, where  $V(k, j)$  denotes said two-dimensional array  $V$   
10      populated with said evaluation prices; where  $k$  denotes an integer equal to or greater  
11      than 1 and equal to or smaller than  $n$ ;  $j$  denotes an integer equal to or greater than 0  
12      and equal to or smaller than  $s$ ;  $n$  denotes the number of bids;  $s$  denotes the number of  
13      products available for the transaction;  $e_k$  denotes the evaluation price when  $x$  units of  
14      products are purchased according to the bid  $b_k$ ;  $l_k$  denotes the minimum volume of the  
15      bid  $b_k$ ; and  $h_k$  denotes the maximum volume of the bid  $b_k$ .

1       4 (Currently amended). The auction method according to claim 3, wherein a bid  
2      according to ~~which said product is optimally distributed~~ is selected by back tracking  
3      of said two-dimensional array  $V$  from the element on the smallest row and in the  
4      smallest column.

1       5 (Currently amended). The auction method according to claim 1, further comprising:  
2           allocating two-dimensional arrays  $V$  and  $Q$  to a memory area by using said  
3      dynamic programming;  
4           initializing said two-dimensional arrays  $V$  and  $Q$ ; and  
5           recursively solving recursive equations for said two-dimensional arrays  $V$  and  
6       $Q$  using said computing resources,  
7           ~~wherein said evaluation prices for said product represent a linear function~~  
8           ~~relative to the volumes for said product desired for said transaction, and~~  
9           wherein

$$V(k, j) := \begin{cases} V(k + 1, j) \\ V(k, j + 1) \\ V(k, j + 1) + e_k & \text{if } 1k \leq Q(k, j + 1) < h_k \\ V(k + 1, j + 1_k) + e_k l_k \end{cases}$$

$$10 \quad Q(k, j) := \begin{cases} Q(k, j + 1) + 1 & (\text{if } V(k, j) = V(k, j + 1) + e_k) \\ 1_k & (\text{if } (k, j) = V(k + 1, j + 1_k) + e_k l_k) \\ Q(k, j + 1) & (\text{if } V(k, j) = V(k, j + 1)) \\ 0 & (\text{otherwise}) \end{cases}$$

11      is employed as said recursive equation, where  $V(k, j)$  denotes said two-dimensional  
12     array  $V$  populated with said evaluation prices; where  $Q(k, j)$  denotes said two-  
13     dimensional array  $Q$  populated with said count of said product available for sale;  
14     where  $k$  denotes an integer equal to or greater than 1 and equal to or smaller than  $n$ ;  $j$   
15     denotes an integer equal to or greater than 0 and equal to or smaller than  $s$ ;  $n$  denotes  
16     the number of bids;  $s$  denotes the number of products available for the transaction;  $e_k$   
17     denotes the evaluation price when  $x$  units of products are purchased according to the  
18     bid  $b_k$ ;  $l_k$  denotes the minimum volume of the bid  $b_k$ ; and  $h_k$  denotes the maximum  
19     volume of the bid  $b_k$ .

1      6 (Original). The auction method according to claim 5, wherein a bid according to  
2     which said product is optimally distributed is selected by back tracking of said  
3     two-dimensional array  $V$  from the element on the smallest row and in the  
4     smallest-column.

1      7-12. Canceled

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1       13 (Currently amended). An auction system of computing resources for holding an  
2       auction for a product comprising:

3               means for receiving bids from at least one computer or from multiple  
4       computers within a network of computers, ~~for each product type of multiple product~~  
5       ~~types in a transaction,~~ that include minimum desired volumes and maximum desired  
6       volumes and evaluation prices for said product; ~~wherein said evaluation prices for~~  
7       ~~said product are represented as a non-linear function relative to the desired volume of~~  
8       ~~said product;~~

9               means for generating, using computing resources, a finite set of bids that  
10      include as an element said bids that were received from said at least one computer or  
11      from multiple computers within said network of computers;

12               means for employing dynamic programming using said computing resources  
13      to generate, using said bids that were received from said at least one computer or from  
14      multiple computers within said network of computers, a subset of bids wherein a  
15      maximum gain is obtained within a range represented by a count of said product  
16      available for sale;

17               means for identifying or accepting a bid from said subset of bids.

1       14 Canceled

1       15 (Previously presented). The auction system according to claim 13, further  
2       comprising:

3               means for allocating a two-dimensional array V to a memory area by using  
4       said dynamic programming using said computing resources;

5               means for initializing said two-dimensional array V;

6               and recursively solving the recursive equation for said two-dimensional array  
7       V, wherein

8        $V(k, j) := \max \{V(k+1, j), V(k, j+1), \max_{1 \leq n \leq h_k} \{V(k+1, j+n) + e_k(n)\}\}$

9       is used as the recursive equation, where V(k, j) denotes said two-dimensional array V  
10      populated with said evaluation prices; where Q(k, j) denotes said two-dimensional

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11 array Q populated with said count of said product available for sale; where k denotes  
12 an integer equal to or greater than 1 and equal to or smaller than n; j denotes an  
13 integer equal to or greater than 0 and equal to or smaller than s; n denotes the number  
14 of bids; s denotes the number of products available for the transaction;  $e_k$  denotes the  
15 evaluation price when x units of products are purchased according to the bid  $b_k$ ;  $l_k$   
16 denotes the minimum volume of the bid  $b_k$ ; and  $h_k$  denotes the maximum volume of  
17 the bid  $b_k$ .

1 16 (Original). The auction system according to claim 15, further comprising:  
2       means for selecting a bid according to which said product is optimally  
3 distributed by back tracking of said two-dimensional array V from the element on the  
4 smallest row and in the smallest column.

1 17 (Currently amended). The auction system according to claim 13, further  
2 comprising:  
3       means for allocating two-dimensional arrays V and Q to a memory area by  
4 using said dynamic programming using said computing resources;  
5       means for initializing said two-dimensional arrays V and Q; and  
6 means for recursively solving recursive equations for said two-dimensional arrays V  
7 and Q, ~~wherein said evaluation prices for said product represent a linear function~~  
8 ~~relative to the volumes for said product desired for said transaction,~~ and  
9       wherein

$$V(k, j) := \left\{ \begin{array}{ll} V(k + 1, j) \\ V(k, j + 1) \\ V(k, j + 1) + e_k & \text{if } 1k \leq Q(k, j + 1) < h_k \\ V(k + 1, j + 1_k) + e_k l_k \end{array} \right\}$$

$$Q(k, j) := \begin{cases} Q(k, j + 1) + 1 & (\text{if } V(k, j) = V(k, j + 1) + e_k) \\ l_k & (\text{if } (k, j) = V(k + 1, j + 1_k) + e_k l_k) \\ Q(k, j + 1) & (\text{if } V(k, j) = V_{k, j + 1}) \\ 0 & (\text{otherwise}) \end{cases}$$

10 is employed as said recursive equation, where  $V(k, j)$  denotes said two-dimensional  
11 array  $V$  populated with said evaluation prices; where  $Q(k, j)$  denotes said two-  
12 dimensional array  $Q$  populated with said count of said product available for sale;  
13 where  $k$  denotes an integer equal to or greater than 1 and equal to or smaller than  $n$ ;  $j$   
14 denotes an integer equal to or greater than 0 and equal to or smaller than  $s$ ;  $n$  denotes  
15 the number of bids;  $s$  denotes the number of products available for the transaction;  $e_k$   
16 denotes the evaluation price when  $x$  units of products are purchased according to the  
17 bid  $b_k$ ;  $l_k$  denotes the minimum volume of the bid  $b_k$ ; and  $h_k$  denotes the maximum  
18 volume of the bid  $b_k$ .

1 18 (Currently amended). The auction system according to claim 17, wherein a bid  
2 according to which said product is optimally distributed is selected by back tracking of  
3 said two-dimensional array  $V$  from the element on the smallest row and in the smallest  
4 column.

1 19-24. Canceled

1 25 (Currently amended). A computer-readable storage medium on which a program for  
2 holding an auction for a product is stored, said program enabling computing resources  
3 to perform:

4 a process for receiving bids from at least one computer or from multiple  
5 computers within a network of computers, for each product type of multiple product  
6 types in a transaction, that include minimum desired volumes and maximum desired  
7 volumes and evaluation prices for said product wherein said evaluation prices for said

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8       product are represented as a non-linear function relative to the desired volume of said  
9       product;

10            a process for generating, using computing resources, a finite set of bids that  
11          include as an element said bids that were received from said at least one computer or  
12          from multiple computers within said network of computers;

13            a process for employing dynamic programming using said computing resources  
14          to generate, using said bid set that were received while using said process for receiving  
15          bids, a subset of bids wherein a maximum gain is obtained within a range represented  
16          by a count of said product available for sale; and

17            a process for identifying or accepting a bid from said subset of bids.

1       26-27. Canceled